

90is Series



**Mirage**

THE ORIGINAL BIPOLAR LOUDSPEAKER™

**o** w n e r s m a n u a l

90is  
190is  
290is  
390is  
490is

PRINTED IN CANADA  
7AIM90is

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## WELCOME TO THE WORLD OF MIRAGE LOUDSPEAKERS.

The following advice is offered to facilitate proper installation of your Mirage speakers to provide peak performance.

Extensive research along with great care at every design stage has enabled Mirage to produce loudspeakers with extraordinary performance characteristics: a performance level that is equal, or superior to other speakers costing many times their price.

The finest components and materials, made with sophisticated manufacturing and quality control ensure that you will enjoy this exceptional performance for many years.

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**IMPORTANT:** Please retain the carton and packing material for this Mirage product to protect it in the event it ever has to be shipped to a service center for repair. Product received damaged by a service center that has been shipped by the end user in other than the original packaging, will be repaired, refurbished and properly packaged for return shipment at the end user's expense.

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## FEATURES AND BENEFITS

Your new Mirage 90is Bipolar Series speakers feature state-of-the-art technologies derived from development of the flagship of the line...the world acclaimed Mirage M-1si.

### Elegant Styling:

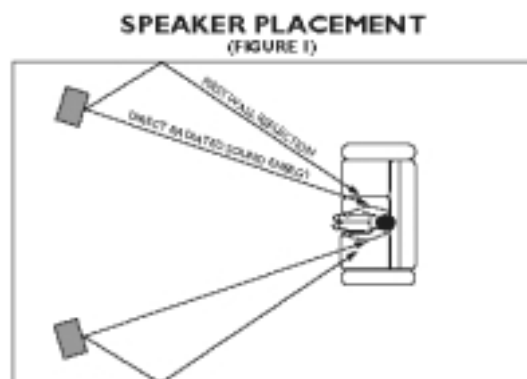
Representing an exciting new look, the advanced design of these slim and elegant models suggests they conceal an entire stage full of musicians.

The 90is Series speakers employ exclusive Mirage engineered drivers, crossovers and enclosures to deliver exceptional depth, breadth and emotional involvement to your music and home theater entertainment.

## ROOM ACOUSTICS AND SPEAKER PLACEMENT

Mirage loudspeakers have been designed to provide high performance in a wide variety of domestic settings. It is important to note however, that building structure, dimensions and furnishings all play a part in the quality of sound you will ultimately achieve. Where possible the following should be taken into consideration when placing Mirage speakers in your listening room:

1. Low frequency performance (below 100 Hz) can be affected by the structure of the room. A solid floor is preferred to avoid exaggeration of low frequencies.
2. Rooms with different height, width and length are preferable for best low frequency performance.
3. Mid and high frequencies are affected by the mix of soft and hard furnishings in the room. An excess of soft items such as curtains, carpets, sofas and wall coverings can produce a dull, lifeless reproduction. The same room without any soft furnishings will produce a brighter, harder sound, so a balance of soft and hard furniture, floor and wall coverings should be your goal for optimum sonic performance.



4. Most of the sound heard from a loudspeaker has been reflected from one or more walls of the room. Usually, less than half the sound is heard directly from the loudspeaker. The remaining information you hear has been reflected from the surfaces of your room.

Reflective surfaces have individual sound absorption characteristics, and it is important for good stereo perception that frequency

response be the same from both left and right channels. It is therefore important that consideration be paid to the left and right reflecting walls. First, they should be symmetrical, equally spaced from the speakers and the listeners. Secondly, they should have the same, or very similar reflective properties. Example: A curtain on one wall and a painted surface on the opposite wall will result in unbalanced reflections, which in turn affect the stereo image. Experiment with toe-in/toe-out positioning of your speakers until best results are achieved.

5. Spiked feet are recommended for stability on carpeted floors.
6. The loudspeakers should be placed 2 to 3 meters (6" to 10") apart and approximately 1/2 meter from the wall behind the speaker. The distance from loudspeakers to listener should be about 1 to 1.5 times the distance separating the speakers (see figure 1).

### Selection of Proper Wire

We recommend the use of high quality speaker cable. The speaker cable you select will ideally be fitted with high quality connectors with either 5/16" spade lugs or dual banana plugs.

In most installations, ordinary lamp cord (16-18 gauge) has enough resistance to degrade the signal between amplifier and speakers, particularly in lengths over 3 meters (10'). If possible the speaker cables should be the same length for both channels and the shorter they are, the better the sonic performance will be.

**\* When connecting your speakers to your sound system, turn off your amplifier to avoid damage which could result from shorting of the speaker leads.**

### Amplifier Requirements

Mirage loudspeakers have been designed to be driven to high listening levels with moderate power; while at the same time being capable of handling the power output of large amplifiers.

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**NOTE:** Mirage 90is Series speakers are 8 ohms nominal and will function well with quality amplifiers.

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## Amplifier to Loudspeaker Connection

### 1) Conventional Hook-up

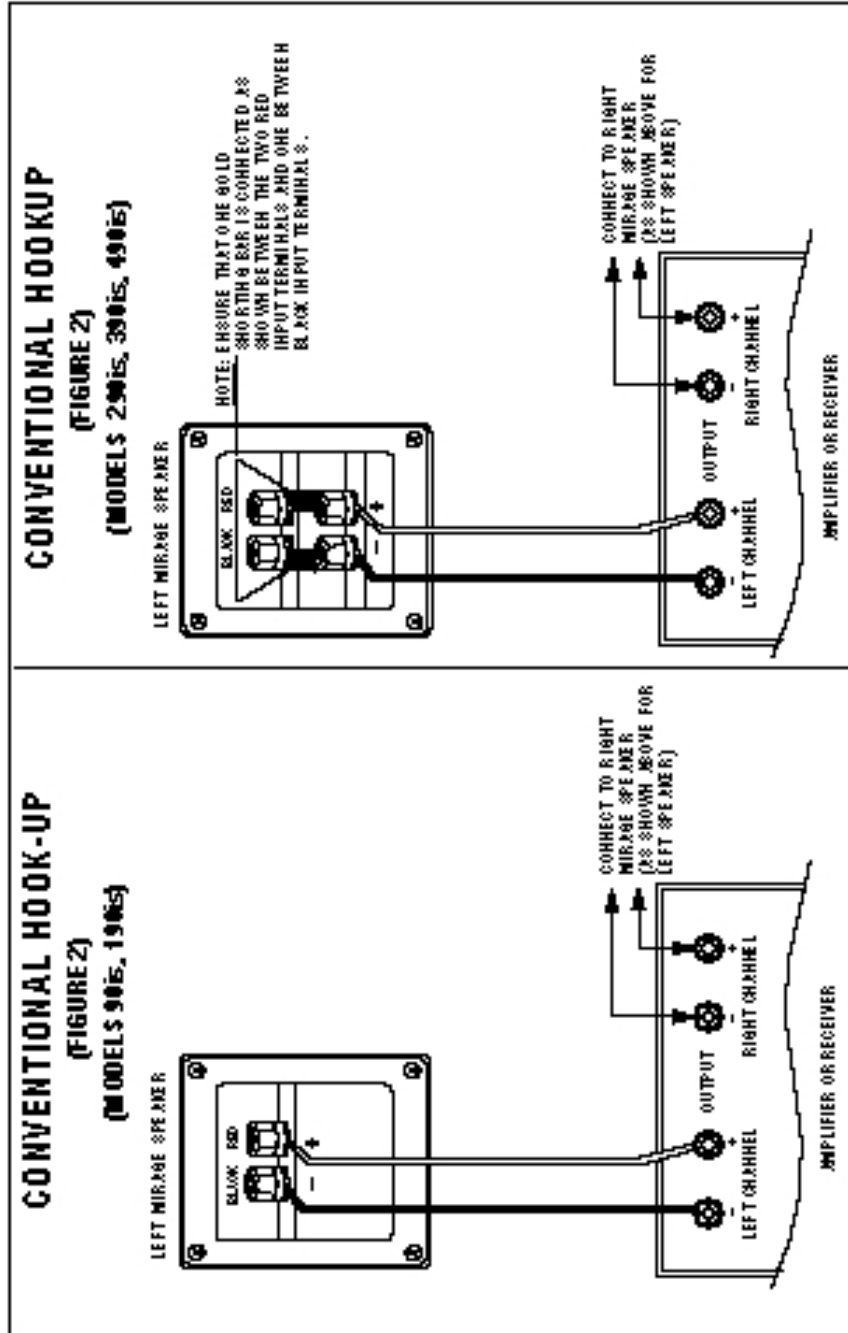
Connect speaker wire from the positive (Red +) terminal on your amplifier to positive (Red +) terminal on your Mirage speaker. Connect negative (Black -) terminal on your amplifier to negative (Black -) terminal on your Mirage speaker. (see figure 2)

### 2) Bi-Wire Hook-up

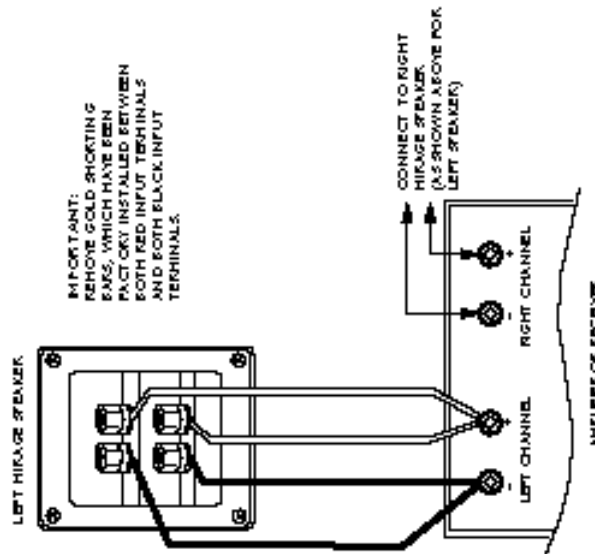
Remove shorting straps. Use two dual conductor cables; one cable for low frequencies and one cable for high frequencies. Separate connections are made between the power amplifier to the low frequencies binding posts on the speaker and from the power amplifier to the high frequency binding posts. This allows you to choose separate wires that are best suited for the low or high frequencies. (see figure 3)

### 3) Combination Bi-Amp/Bi-Wire Hook up

This method uses separate amplifiers for the low frequency section and high frequency section of the speaker. This dramatically improves musicality. The amplifier's gains and the phase relationship of the amplifier's input to output must be identical. (see figure 4)

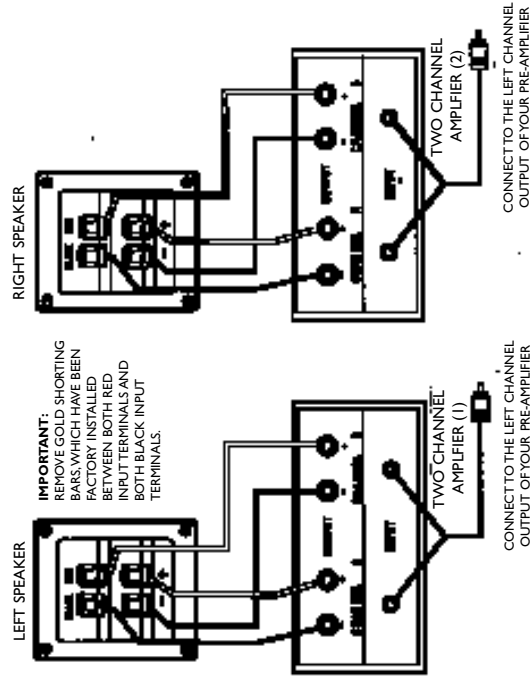


### BI-WIRE HOOKUP (FIGURE 3)



### COMBINATION BI-AMP / BI-WIRE HOOK-UP (FIGURE 4)

(MODELS 290is, 390is, 490is)  
(THIS METHOD USES TWO IDENTICAL TWO CHANNEL AMPLIFIERS FOR IMPROVED PERFORMANCE)



### **Care of Finish**

Your Mirage speakers are attractively finished and should be gently wiped clean, from time to time, with a damp cloth to remove any dust or stains.

### **Distortion Causes Speaker Damage**

When an amplifier is "overdriven" it produces distorted output power several times greater than its rated power. All amplifiers produce high levels of distortion when they are driven beyond their rated power output and this distortion can damage any speaker. Overdriven amplifier distortion is called "Clipping".

Clipping can be identified by a fuzzy or distorted sound. If this is heard, lower the volume immediately to avoid damage to your system.

If louder volumes are desired, the only practical solution is to obtain an amplifier capable of more clean (undistorted) output power.



90is series owners manual

**SPECIFICATIONS**

	<b>90is</b>	<b>190is</b>	<b>290is</b>
<b>SYSTEM TYPE</b>	High performance Front radiating 2 way design. Rear port.	High performance book shelf speaker. Front Radiating 2 way design. Front vented.	High performance book shelf speaker. Front Radiating 2 way design. Front vented.
<b>TWEETER</b>	1/2" (13mm) titanium coated dome.	1" - 1" (25.4mm) Ferro-fluid cooled vapour deposited titanium	1" - 1" (25.4mm) Ferro-fluid cooled vapour deposited titanium
<b>BASS/MID DRIVERS</b>	1 x 5-1/4" (13.5cm) injection molded diaphragm	1 x 5-1/2" (14cm) injection molded polypropylene cones. Termination via Butyl surrounds.	1 x 6-1/2" (16.5cm) molded polypropylene cones. Termination via Butyl surrounds.
<b>FREQUENCY RESPONSE</b> On-Axis: ± 3 dB	58Hz - 20KHz	47Hz - 22KHz	43Hz - 22KHz
<b>USABLE BASS CUTOFF</b> (@ -10dB)	50Hz	41Hz	37Hz
<b>SENSITIVITY</b> (Anechoic)	84dB 86.5dB	89.5dB 88dB 2.83 V / 1M	87dB 89dB 86dB 2.83 V / 1M
<b>CROSSOVER POINTS</b>	3.0KHz	1.8KHz	1.8KHz
<b>NOMINAL IMPEDANCE:</b>		8 Ohms	8 Ohms 8 Ohms
<b>REC. AMP POWER</b>	15-80 watts RMS	15-110 watts RMS	15-125 watts RMS
<b>MAX POWER HANDLING:</b>	80 watts RMS	125 watts RMS	125 watts RMS
<b>DIMENSIONS:</b> H x W x D (po) (cm)	10-1/2 x 6-1/2 x 8-1/4 26.7 x 16.5 x 21	14-5/8 x 7-1/4 x 10-1/4 84.2 x 18.4 x 26	16 x 8-1/2 x 10-1/2 40.6 x 21.6 x 26.7
<b>WEIGHT</b>	8 lbs. (3.15kg)	16 lbs. (6.3kg)	18 lbs. ea. (7.1kg)
<b>FNISH</b>	Black Ash / White	Black Ash Vinyl Veneer Rosewood	Black Ash Vinyl Veneer Rosewood
<b>GRILLE COLOUR</b>	Black/White	Black	Black

DESCRIPTIONS AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

**SPECIFICATIONS**

	<b>390is</b>	<b>4990is</b>
<b>SYSTEM TYPE</b>	Floor standing, front radiating 2 way loudspeaker. Front vented through tuned port.	Floor standing, front radiating 2 way loudspeaker. Front vented through tuned port.
<b>TWEETER</b>	1" (25.4mm) Ferro-fluid cooled vapour deposited Titanium dome.	1" (25.4mm) magnetically shielded Ferro-fluid cooled vapour deposited titanium dome.
<b>BASS/MID DRIVERS</b>	1 x 6-1/2" (16.5cm) injection molded polypropylene cone Termination via Butyl surrounds..	2 x 5-1/2" (14cm) magnetically shielded injection molded polypropylene cone Termination via Butyl surrounds..
<b>FREQUENCY RESPONSE</b> On-Axis: ± 3 dB	42Hz - 22KHz	42Hz - 22KHz
<b>USABLE BASS CUTOFF</b> (@ -10dB)	35Hz	35 Hz
<b>SENSITIVITY</b> (Anechoic)	89dB 86dB @ 2.83 V /1M	89dB 86dB @ 2.83 V /1M
<b>CROSSOVER POINTS</b>	1.8KHz	1.8KHz
<b>NOMINAL IMPEDANCE</b>	8 Ohms	8 Ohms
<b>REC. AMP POWER</b>	15-125 watts RMS	15-125 watts RMS
<b>MAX POWER HANDLING</b>	125 watts RMS	125 watts RMS
<b>DIMENSIONS</b> H x W x D	(po) 33-7/8 x 8-1/2 x 10-1/2 (cm) 85.4 x 21.6 x 26.7	35-3/4 x 7-5/8 x 9-3/8 90.8 x 19.4 x 23.8
<b>WEIGHT</b>	30 lbs. (11.85kg)	35 lbs. ea. (13.78kg)
<b>FNISH</b>	Black Ash Vinyl Veneer Rosewood	Black High Gloss
<b>GRILLE COLOUR</b>	Black	Black

DESCRIPTIONS AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

## LIMITED WARRANTY POLICY

### Warranty in the United States and Canada

Mirage warrants this product to the retail purchaser against any failure resulting from original manufacturing defects in workmanship or materials. The warranty is in effect for a period of five (5) years from date of purchase from an authorized Mirage dealer and is valid only if the original dated bill of sale is presented when service is required.

The warranty does not cover damage caused during shipment, by accident, misuse, abuse, neglect, unauthorized product modification, failure to follow the instructions outlined in the owner's manual, failure to perform routine maintenance, damage resulting from unauthorized repairs or claims based upon misrepresentations of the warranty by the seller.

### Warranty Service:

If you require service for your Mirage loudspeaker(s) at any time during the five (5) year warranty period, please contact: 1) the dealer from whom you purchased the product(s), 2) Mirage National Service, 203 Eggert Road, Buffalo, N.Y. 14215 Tel: 716-896-9801 or 3) Mirage Loudspeakers, a division of Audio Products International Corp., 3641 McNicoll Avenue, Scarborough, Ontario, Canada, M1X 1G5, Tel: 416-321-1800. You will be responsible for transporting the speakers in adequate packaging to protect them from damage in transit and for the shipping costs to an authorized Mirage service center or to Mirage Loudspeakers. If the product is returned for repair to Mirage Loudspeakers in Scarborough or Buffalo, the costs of the return shipment to you will be paid by Mirage, provided the repairs concerned fall within the Limited Warranty. Mirage Warranty is limited to repair or replacement of Mirage products. It does not cover any incidental or consequential damage of any kind. If the provisions in any advertisement, packing cartons or literature differ from those specified in this warranty, the terms of the Limited Warranty prevail.

### Warranty Outside of The United States and CANADA:

Product warranties may be legislated differently from one country to another. Ask your local dealer for details of the LIMITED WARRANTY applicable in your country.

## WARNING

### IMPORTANT TECHNICAL NOTE PLEASE READ BEFORE OPERATING SPEAKERS

THE WARRANTY ON SPEAKERS IS VOID IF THE VOICE COILS ARE BURNED OR DAMAGED AS A RESULT OF OVERPOWERING OR CLIPPING.

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**OVERPOWERING:** The volume control of most amplifiers and receivers is a logarithmic type, which means that full power may be reached with volume control at as little as the halfway point. In addition, operating the loudness feature or boosting the treble or bass controls increases power output well beyond rated levels.

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AS A RESULT OF THE ABOVE FACTORS, A 30 WATT AMPLIFIER CAN PRODUCE OUTPUT LEVELS OF OVER 100 WATTS AND MAY DAMAGE YOUR LOUDSPEAKER.

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**CLIPPING:** Clipping refers to the power level at which an amplifier begins to distort a waveform by flattening its top and bottom into a square wave-shape. When fed to tweeters and/or midrange speakers, this may result in exceeding their maximum power handling capacity, causing damage to the speaker voice coil.

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CLIPPING CAN BE IDENTIFIED BY A FUZZY OR DISTORTED SOUND. IF THIS IS HEARD, LOWER THE VOLUME IMMEDIATELY TO AVOID DAMAGE TO YOUR SYSTEM. CONTINUOUS CLIPPING WILL DAMAGE OR BURN OUT THE SPEAKERS.

